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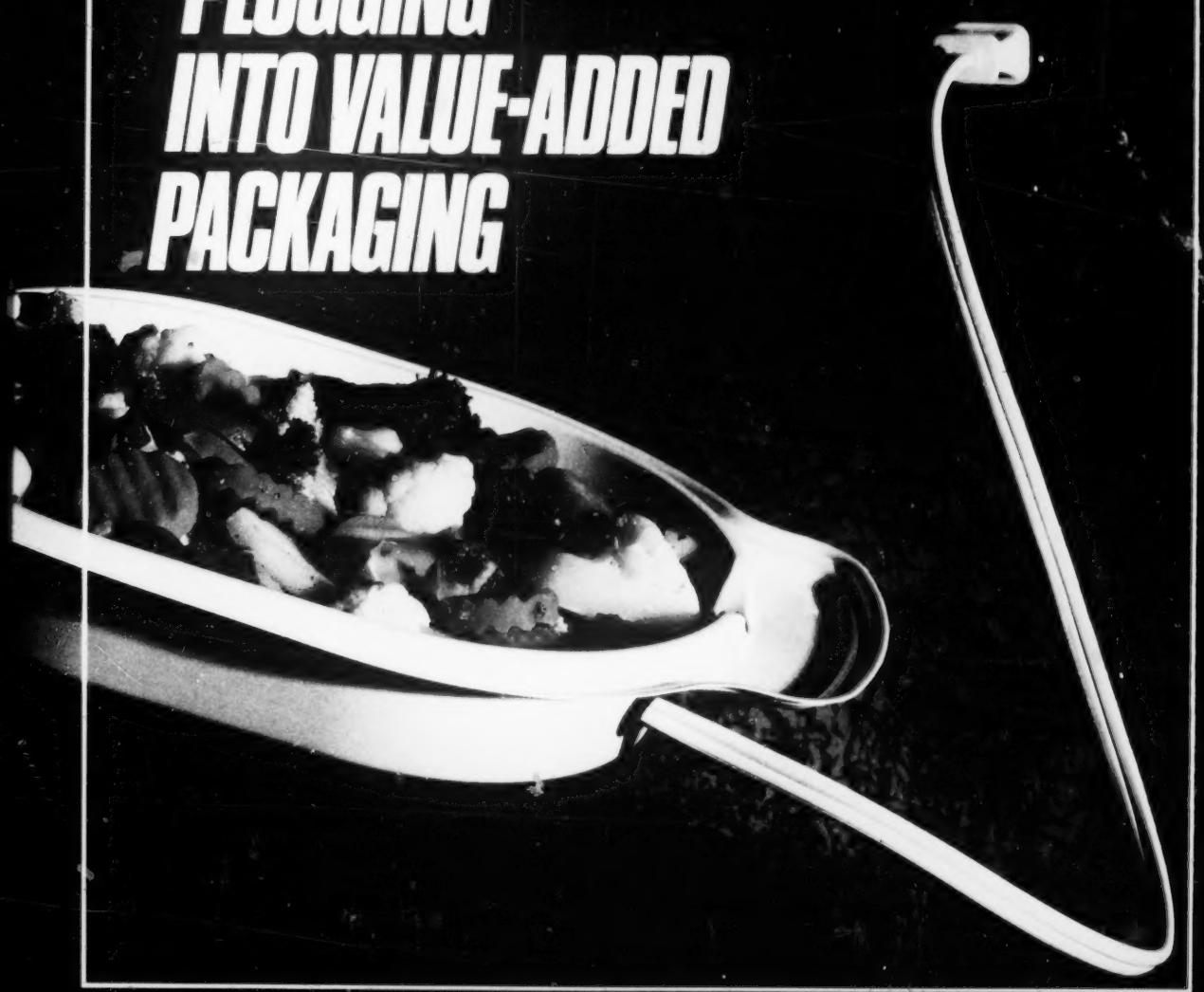
MAY 1990

PACK EXPO SHOW REPORT

FOOD ENGINEERING

SINCE 1928, THE SOURCE ON PROCESSING, PACKAGING, AND PRODUCT DEVELOPMENT

PLUGGING INTO VALUE-ADDED PACKAGING



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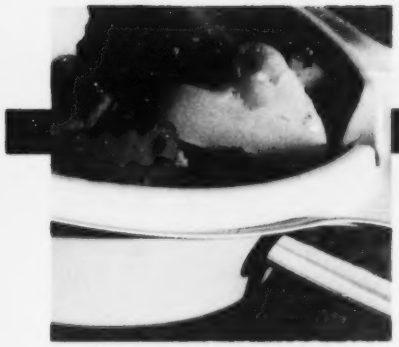

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Food products that can be prepared in a matter of minutes are what consumers want. And, value-added packaging gives consumers the convenience they crave.

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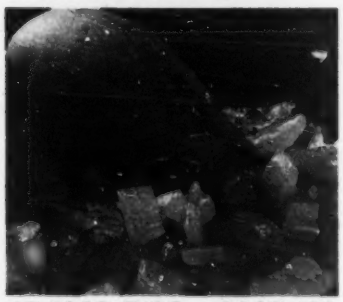

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JESSE H. NEAL AWARD-WINNING PUBLICATION

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Almost 7,000 new brands invade store shelves

Approximately 6,960 new brands have been introduced to grocery store shelves during the past two years, reported a recent Arbitron/SAMI, (New York) study. However only 3.5 percent or 240 of them blossomed into million dollar earners by early November 1989.

Apple Cinnamon Cheerios showed the highest dollar volume with more than $92 billion. Debutante brands broke down as: 3,900 in dry grocery; 700 frozen; 785 refrigerated; 925 health/ beauty aids and 650 non-food.

More than half of the 6,960 new brand introductions were in the dry grocery category. (Source: Arbitron/SAMI.)

MIF/IICA plays cool to DFISA offer

The Milk Industry Foundation (MIF) and the International Ice Cream Association (IICA) are playing it cool to the Dairy and Food Industries Supply Association (DFISA) offer to jointly sponsor DFISA's biennial Expo. Although DFISA has offered greater cash compensation (see FE, April '90) to MIF/IICA, sources say MIF/IICA is seeking a greater voice in the management of the Expo.

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First rDNA food product cleared

In response to a Feb., 1988 petition by Pfizer, FDA on March 23 affirmed that chymosin dervived from fermentation of a nontoxic strain of *E. coli* K-12 geneticaly engineered to contain the prochymosin gene is Generally Recognized As Safe (GRAS). Pfizer's chymosin is thus the first food product developed through recombinant DNA technology to be cleared for direct food use. The product is GRAS as an enzyme, processing aid, stabilizer and thickener in cheese, frozen dairy desserts and mixes, gelatins, puddings, fillings and milk products, said FDA.

Clearance of this petition obviates a Pfizer food-additive petition (filed at the same time as the GRAS-affirmation petition) to clear the genetically-modified organism as a source of prochymosin for use in food. FDA concluded that "the chymosin enzyme in chymosin preparation is the same as the chymosin enzyme in calf rennet" and "is as safe as the chymosin enzyme in rennet."

FDA's action seems to pave the way for further clearances of Gist-Brocades' and Genencor's chymosins developed via rDNA.

Pfizer Chemical Division, 235 East 42nd Street, New York, NY 10017

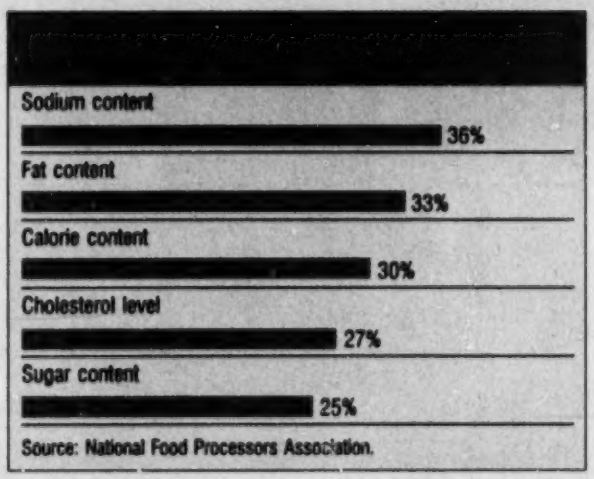
Circle 207

MARKETPLACE

Consumers prefer simple food label with numerical comparisons

When given a variety of food label formats to select from, consumers preferred a simple version that contained information on fiber, saturated and unsaturated fats, sodium and cholesterol. This was among the findings of the recently completed food labeling study sponsored by The National Food Processors Association (NFPA). The study—*Food Labeling and Nutrition: What Americans Want*—was conducted in two phases by Opinion Research Corporation, Princeton, NJ, and involved more than 1,400 consumers.

Label format preference was determined in the second phase of the study where consumers were asked to rank six label formats according to their helpfulness in making decisions about food purchases. A factorial design was utilized where each respondent saw no more than four of the six possible label formats. The formats were: **#1:** Control; current label. **#2:** Current label with full information on carbohydrates (complex vs. simple sugars versus fibers) and fats (saturated versus unsaturated). **#3:** Format #2 plus information on percentage of calories from protein, saturated and unsaturated fat, complex carbohydrates and simple sugars. **#4:** Same information as Format #3, with percentage of calories for key nutrients presented as a pie chart. **#5:** Format #2 plus a nutritional profile stating recommended daily allowance for calories, total fat, saturated fat, cholesterol and sodium. **#6:** Same information as Format #5, with daily recommendations presented as a bar graph.



Each of the six label formats was tested with each of six products: breakfast cereal, tomato soup, 2% lowfat milk, chocolate chip cookies, macaroni and cheese and enriched white bread.

Consumers expressed a clear preference for Label #5, according to the study. The preference shown was consistent with the desire for additional information on key nutrients, and more information on RDAs noted in phase one. Label #1, which provides the least information, was rated as very helpful by the fewest number.

Consumers also indicated a slight preference for seeing sugars grouped rather than shown in their current format. Copies of the report are available from NFPA's Donna Smith at 202/639-5934.

Circle 20 or see FEM, p. 261→

Poll reveals that Americans prefer recyclable containers

According to a nationwide poll conducted for the glass container industry, an overwhelming number of American consumers—72 percent—would purchase food or beverages in containers that are recyclable over non-recyclable containers. This represents an 18 percent increase from 1988 according to the poll conducted by the Gallup Organization for the Glass Packaging Institute (GPI).

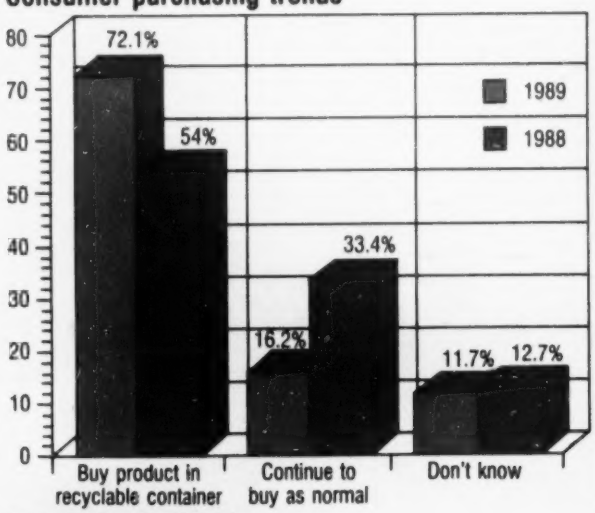
When consumers were asked if they would continue to buy a product packaged in a non-recyclable container, only 16 percent responded that they would continue to buy that product in that package.

The poll also revealed that nearly 50 percent of those polled said that their first choice of how to help solve the solid waste crisis is curbside pickup. This option was selected over returning recyclable materials to recycling centers or taking deposit containers back to stores for redemption. This represents a 23 percent increase from a similar poll conducted in 1989. The GPI-sponsored poll on recycling attitudes also showed a nearly uniform response in every region of the nation on the question of use of recyclable packaging and separation of refuse for curbside pickup.

"The ongoing movement by the American consumer towards a recyclable food and beverage packaging environment is reflected by the numbers in this poll," said Lewis D. Andrews, Jr., President of the Glass Packaging Institute. "Not only do Americans want to buy their food and drinks in recyclable packages, but they also are more than ready to separate glass, cans and paper for pick-up at curbside," said Andrews.

For more information on this study contact the Glass Packaging Institute, 1801 K Street, N.W., Suite 1105-L, Washington, DC 20006.

Consumer purchasing trends



Source: The Gallup Organization, Inc.

The solid waste reduction and energy-saving benefits of steel recycling and the growth of steel can recycling were the primary issues of focus of The American Iron and Steel Institute's (AISI) Committee of Tin Mill Products Producers (CTMPP) participation at the 1990 Food Exposition about Science and Technology (FEAST) Show.

During its "Steel Trek" programs at the show, the AISI promoted the industry's position as the Number One recycler in America. Steelmakers want to help the food industry understand not only steel recycling's environmental and ecological benefits, but also the economic advancements of the steel can. These combined features will help food processors and packers build on the traditional quality and performance of the steel package to meet today's consumer needs.

William Heenan, board chairman of the Steel Can Recycling Institute (SCRI) and general manager of Tin Mill Products at USX Corporation, said that the industry has generated momentum on the recycling issue over the past few years. He also said the steel industry is the single largest recycler in America and consumes twice the amount of recycled material than all other industries—double that of paper, non-ferrous metals (aluminum, copper), glass and plastics combines. The result is decreased pressure on the dwindling landfill space and environmentally compatible material.

The American Iron and Steel Institutes's Committee of Tin Mill Products Producers is comprised of eight major North American Steel producers including Bethlehem Steel Corporation, Dofasco Inc., LTV Steel Company, National Steel Corporation, Stelco Inc., USS, a division of USX, Weirton Steel Corporation, and Wheeling-Pittsburgh Steel.

GOT A NEW PRODUCT? GET A NEW PACKAGE!

Any new product introduction is always joined by a new and demanding package design. Are the packages meeting these demands? You bet they are!

MARGIE J. RUSSELL
TECHNICAL EDITOR

We are all familiar with the scenario: You've worked all day, it is now 5:30 p.m. and you are hungry for a decent meal. And that meal must be nutritious, good-tasting, and most of all easy to prepare. What do you do now?

Thanks to demands like yours and millions of other average consumers, food companies have solved the problem. Some of these products may already be in your home and in your local store which you can quickly pick up on the way home. Without a doubt, food packaging has answered the call for products that can be prepared in a matter of minutes.

The push for convenience packaging continues as product development in the industry still focuses on products that can be heated in the microwave in a matter of minutes.

"Without question, the premise of the food industry is changing and consumers are likewise changing," says Dr. Melvin L. Druin, Vice President, Packaging Systems, Campbell Soup Company, Camden, NJ. "Today, in terms of convenience and new packaging designs, everything is added value in the package. We need to

quantify what convenience is and what the consumer is willing to pay based on value. And, when new products are introduced, some food formulations have to be changed and different processing techniques must be dealt with. Almost always, processors and packagers look to minimize risks; let's face it, you cannot make a lot of mistakes in this marketplace. Any new major product introduction costs mega bucks and if there are functional attributes added to a package, this all adds up to cost value."

Zap that container

The original minute meal and convenience food was developed around the microwave oven. Microwave packaging is convenience packaging. In general, the container must be microwaveable, easy to open, lightweight, unbreakable, portable, recloseable, and have "handleability": pop it in the microwave and it is done.

Market analysts forecast that prepared entrees will remain the largest growth area in the retort/microwaveable segment. (See chart.) However, the growth of this segment is somewhat limited because many of these products are substitution products and container sizes and line speeds prohibit further expansions at this time.

Specifically, shelf stable prepared entrees include both tub and tray configurations. But, the industry does make distinctions between the two types of entrees. Entrees in tub configurations are substitution products—they are microwaveable meals without the metal can. Shelf stable entrees in tray configurations are usually considered upscale meals or upscale sidedishes. These entrees are substitution products for frozen food entrees and normally do not provide the added value seen in tub products.

"When you look back at the last two decades of the industry, the word "convenient" took on different meanings," explains Campbell's Dr. Druin. "Back in the 1950s, for example, the four-compartment tray contained a complete entree, was placed in a conventional oven for 30-35 minutes, and this was convenient. Now we have meals where preparation time is a minute or two in a microwave. Our own Microwave Institute has estimated that more than 85 percent of the workplaces in the United States now have microwaves and at least 80 percent of the employees are using the microwave at work at least once per week. This definitely gives a new meaning to convenience."

Companies may decide on a new product introduction for a new line, substitution or extension but they must be concerned with safety and stability in their retort/microwaveable products. And, from a retail standpoint, they must market that product effectively.

A new product that just entered test markets in Baltimore, Washington, DC, St. Louis, and Seattle is Pet Incorporated's *Progresso To: Go*, a line of shelf stable microwaveable meals. This line is targeted for the office crowd and was primarily developed for taking the meal to work.

Carnation Company has captured the bulk of the fresh pasta market with a product that maintains a 45-day refrigerated shelf life due to the advances in modified atmosphere packaging techniques.

Progresso To: Go is available in six varieties: glazed white meat chicken in sauce with vegetable rice medley, savory turkey with vegetables, spaghetti with meat sauce, pasta salad vinaigrette, pasta primavera with red sauce, and cheese tortellini salad. The company is marketing the product as a "healthy" meal—low calorie, low fat, and low cholesterol—and as an alternative to other shelf stable meals.

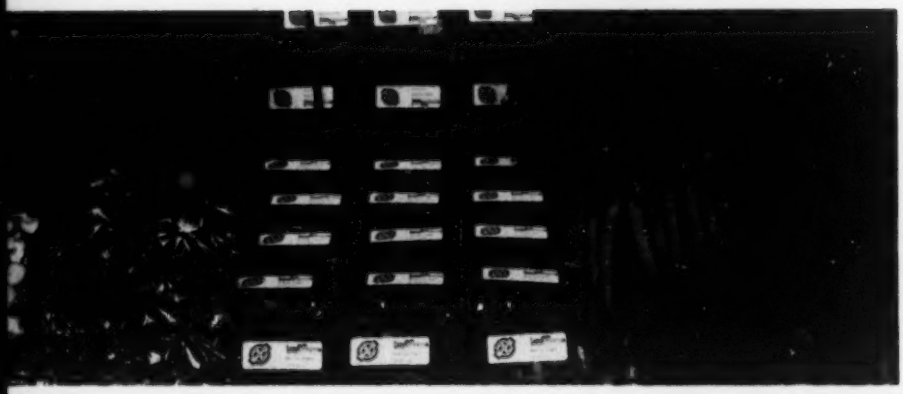
The product is packaged in a high barrier polypropylene/EVOH tray manufactured by Rampart Packaging (Williamsburg, VA). The production of the Progresso To: Go container by Rampart represents a new application for the company as it continues development of the low acid market. The tray is designed to withstand retort conditions. The foil membrane on the tray is heat sealed. Other features about the container are proprietary.

Hold those vegetables

If the thought of keeping fresh broccoli or cauliflower in your refrigerator in a fresh, just-packaged condition for several days before use interests you, then stay tuned for the current chapter in controlled atmosphere packaging (CAP). CAP is usually used as a preservation method for those food products which continue to respire after being picked, such as fresh fruits and vegetables. Under average conditions when using CAP methods, all packaging materials must match the respiration characteristics of the product.

The goal of controlled atmosphere packaging is to extend shelf life by reducing the product's respiration rate; this has been executed by Hercules Inc.'s (Wilmington, DE) *FreshHold* package. FreshHold is the only CAP for produce currently on the retail market; the first packer using the system is Fresh Western Marketing, Inc. in Salinas, CA.

The FreshHold system uses no gas



The FreshHold system extends the shelf life of fresh broccoli and cauliflower by 50 to 200 percent. (Source: Hercules, Inc.)

mixtures in the package. (See *FE* Oct. '89.) Instead, the system uses an impermeable container and an active (breathable) membrane label. This label is tailored to the product's respiration and can be adjusted by a proprietary process.

The FreshHold package appeared in retail stores in early fall 1989. The verdict from the retail side is now in; observers believe the package will change consumers' outlook on convenience.

"The FreshHold system really works—it absolutely does," says Richard Spezzano, Vice President, Produce, The Vons Companies Inc., Santa Fe Springs, CA. "Right now, my stores are carrying both the broccoli and cauliflower florets packaged in FreshHold. It increases shelf life two times or better. This definitely helps us [the retailer] because sometimes an entire day is lost on produce because of geographics."

The Vons Grocery chain has 328 stores in a small geographic location:

No trash here—this film can be eaten

Clemson University researchers are studying edible food coatings made from corn, wheat, and soy to see if they can prolong the shelf life of fruits and vegetables and possibly add nutrients.

For two years, a Clemson University agricultural engineer and food scientist have teamed up to develop this form of degradable edible packaging and find a possible market for it. The packaging films, or coatings, are made of proteins from wheat, corn and soybeans. Similar coatings or edible casings have been available for years in the processed meat industry. And interestingly enough, the creation of such films dates back to the 1820s.

According to Clemson food scientist Bob Testin, the concept is like going back to nature. "Apples, peaches, and potatoes all have natural coatings—their skins—that protect what's inside, and this concept of edible packaging would work in the same manner," he explained.

The concept is not product specific yet, Testin says. But, he and Curt Weller, the agricultural engineer also working on the project, want to compare this concept with conventional, non-edible packaging.

"We want to see if this type of film can be a straight replacement for plastic films," Testin says. "We also want to see if we can use the product as a coating to keep vegetables and fruits fresher longer in the market and at home."

Weller and two graduate students have been producing the films and are trying to perfect the amount of proteins needed to make the coating durable and pliable, yet nonpermeable. He wants to explore the possibility of applying the films, which start out as liquid mixtures, as a dip or spray for fresh food products. The proteins would then dry on the product and possibly prolong freshness.

Once the proteins dry, they enter the film state and look similar to the stretchy, opaque fruit "roll-ups" found in grocery stores. Tests indicate that the films are good barriers to oxygen and carbon dioxide, but not water. The wheat protein film shows the most potential, according to Weiler.

The corn film is in commercial use already as a good coating for nut meats and candies, Weller said. "We're now looking at the corn film for higher moisture materials to determine what its potential is," Weller says of the five-year project being funded by the South Carolina Agricultural Experiment Station.

The degradability aspects of this film, while certainly a feature of the packaging, would have secondary impact in terms of waste disposal, Testin explained. If the packaging is edible, it would likely be consumed and never end up in a landfill.

In addition, similar edible protein coatings made from milk proteins are being tested by researchers with the United States Department of Agriculture.

Market segment	Metal			Glass			Plastic		
	1989	1995	2000	1989	1995	2000	1989	1995	2000
Prepared entrees*	1,350	1,200	1,200	–	–	–	200	1,000	1,500
Soup (wet)	3,500	3,700	4,055	–	–	–	20	250	500
Vegetables	5,300	4,900	4,400	100	100	100	20	200	400
Pet food	4,500	5,000	5,500	–	–	–	0	200	400
Baked beans	600	670	725	100	110	120	0	50	100
Infant formula	1,000	1,120	1,235	100	110	125	0	200	500
Evaporated milk	700	650	620	–	–	–	–	–	–
Canned meats	550	575	590	–	–	–	–	–	–
Baby food	–	–	–	1,000	1,150	1,250	–	100	225
Fish/tuna	2,000	2,470	2,860	–	–	–	–	–	–
Fruits	1,850	1,700	1,400	275	275	250	–	–	–
	21,350	21,985	22,585	1,575	1,745	1,845	240	2,000	3,625
1989-2000 % average growth rate			0.6%			1.5%			28%

*Includes tub and tray configurations.

Source: The Dow Chemical Company.

central and southern California and Las Vegas, NV. The FreshHold package is merchandised with convenience produce products like chopped carrot sticks and cole slaw mix. Theoretically, Spezzano explained, the package should sell best when it is right next to the broccoli and cauliflower. But studies have indicated that it sells just as well in the convenience products area.

"The FreshHold package is actually another value added product on the shelf," says Spezzano. "The groups buying this product are the upper income group and those individuals who really value their time, want good nutritional food but don't want to waste time in preparation. The average person buys produce and lets it sit in the refrigerator, forgets about it, and lets it go bad. This product may actually help prevent this. In a good home refrigerator, the broccoli or cauliflower should last four days with no breakdown or loss of color."

But, the FreshHold package does have one main drawback: price. A package of broccoli florets in the FreshHold container costs $1.99 for eight ounces, a price that Spezzano says does not change a lot. The cost of the finished product is not set from supply and demand. The highest cost factors in this product are labor, materials, and transportation costs.

How well is it selling? "Not great, but it is building," says Spezzano. "We need a product like this because it meets the demands of freshness and convenience. I just hope the cost comes down; the opportunities with this product are terrific."

Change of atmosphere

Perhaps the first cousin to CAP is modified atmosphere packaging (MAP) which usually involves prepared foods. These food products are pre-cooked or processed and any packaging materials used must provide barriers to moisture and oxygen and maintain the special gas mix inside the headspace. The gas mix slows the respiration and reproduction rates of bacteria which cause spoilage over time. By slowing the reproduction of the bacteria, spoilage is retarded and shelf life of the product is extended.

One of the primary driving forces behind this technology is consumers' demand for fresh, refrigerated foods without preservatives. Many of these types of products can go from refrigerator to microwave to table in a matter of minutes. A study by Kline & Company, Inc., packaging industry consultants (Fairfield, NJ) projects that this entire CAP/MAP sector will require 11 billion packages in 1993. According to Kline, barrier bag master packs (containing individual packages similar to the traditional tray with film overwrap) will account for about 55 percent of these packages in

Now available in local grocery stores, the fresh, refrigerated meal trend has turned into the fastest growing segment in the industry. (Source: Cryovac Division, W.R. Grace & Company.)

five years. This master pack will retain special gas mixtures until it is opened at the retail store. Thermoformed or preformed individual trays sealed with anti-fog treated lidding will account for approximately 25 percent of this market in 1993. And pallet shrouds for full pallet loads and individual film bags containing up to 15 pounds of fresh product will account for the remaining packages in this sector.

Currently, the leading retail modified atmosphere package in the U.S. is the fresh pasta package. Approximately 40 percent of the market is controlled by the Carnation Company and its line of *Contadina* fresh pasta products. The package consists of rigid tray material which historically has been polyvinyl chloride sheet with a polyvinylidene chloride (PVDC) coating. The top film is commonly oriented polyester with an anti-fog PVDC coating. This is one of the few packages left in the U.S. still using polyvinyl chloride. This package contains a two- or three-serving main course and has a refrigerated shelf life of 45 days.

Gas mixtures for fresh pasta products must be accurately evaluated; only carbon dioxide has an inhibitory effect on microbiological development on food products. Normally, a 25 to 30 percent concentration in the package atmosphere is beneficial. Several different mixtures are available from different suppliers in the industry: *ALIGAL* from Liquid Air Corporation (Walnut Creek, CA) uses a protective atmosphere to displace air in a package which is then sealed, and Airco (Murray Hill, NJ) recommends using a 50:50 mixture of CO_2 to nitrogen (N_2) or a higher ratio of CO_2 to N_2 (80:20) if mold growth is a problem.

In all likelihood, the most important factor in the success of an MAP package is that the entire process must start with a hermetically sealed package. Many times, too, packagers use oxygen scavengers as well as gas mixtures to preserve product freshness. And, interestingly enough, many users feel that in order to prevent mold growth in a modified atmosphere package, an alternative may be to put water back in the product. By adding weight, there is now more oxygen in the package for the scavenger to work.

Two U.S. companies currently supply oxygen scavengers to the domestic market. Multiform Desiccants, Inc., Buffalo, NY, markets *Freshpax*, which de-oxygenates the atmosphere in a package, eliminating spoilage and deterioration of fats and oils. Processors of cheese, butter, and bakery products have shown interest in and are using the product to achieve longer shelf lives for their products.

A brand new product for packagers of oxygen sensitive foods such as meats, fruits, and baked goods is *OxySorb*, an oxygen-absorbing desiccant from United Desiccants-Gates, Louisville, KY. OxySorb reduces spoilage due to oxidation by removing excess oxygen.

The desiccant, which actually can be considered an oxygen scavenger, is sold in individual packets. OxySorb removes excess oxygen in a sealed package or container and is effective at low temperatures. The product begins to work immediately and holds deoxidizing activity up to five hours after opening the outer package without the use of preservatives.

The packets of OxySorb are placed in a sealed package alongside the food product and disposed as ordinary waste after the package is opened. At the present time, there are no domestic usages of the product.

It's already cooked

The next generation of food processing has arrived in this country. Fresh prepared foods take processing and packaging one step further—these foods are fully cooked, complete entrees that many times only require minimal heating. And, these meals are so easy to obtain because they are right in the grocery store or neighborhood convenience store. Fresh prepared, refrigerated foods offer significant opportunities to the consumer, food retailers, and packaging suppliers. Several observers have concluded that the refrigerated food trend should reach $3 or $4 billion by 1993.

The Chilled Foods Association (Atlanta, GA) represents the industry by

Campbell Soup has introduced new packaging designs, taking some familiar products out of conventional containers and putting them into microwaveable ones. (Source: Campbell Soup Company.)

working with the regulatory community in developing guidelines to assure the integrity of chilled products. According to the CFA, chilled foods are fresh, prepared refrigerated foods that meet three criteria:

1. they are processed by performing some or all of the preparation steps traditionally done by the consumer or restaurant;

2. their freshness and wholesomeness is maintained primarily through refrigeration; and

3. they are ready to eat as purchased or with minimal preparation.

Under this classification, prepared chilled foods include refrigerated entrees, fresh pasta, prepared salads, cooked meats and some specialty sauces. Many of the products that are processed with or from meat receive a heat treatment to guarantee microbiological stabilization. However, these products are not sterilized; they have a limited shelf life even though they are kept under refrigeration. Some may be packed in hermetically sealed containers using MAP or vacuum methods.

"There is a tremendous need for foods that are nutritious and good-tasting and supermarkets are meeting this need and pioneering the trend," says Jerry Lyons, Marketing Programs Manager for Cryovac Division, W.R. Grace & Company, Duncan, SC. "Fresh prepared portrays certain connotations to the consumer: freshness, nutritious, and health. Now, supermarkets are not only noted for selling processed food but also fresh foods as well."

The role of fresh prepared foods may be replacing the main meal. There is now a substitution for other convenience-type meals on the market for, say, dinner. The trend probably started within the last 18 months and the awareness of the trend started in the supermarket industry.

As in all cases, any packaging materials used for fresh prepared foods should try to meet the requirements of the application as close as possible. The package does not have to be over-engineered, providing more protection than is really necessary (not to mention the increased cost factors), and it should not be under-engineered, breaking down early in the distribution process and not protecting the product at all.

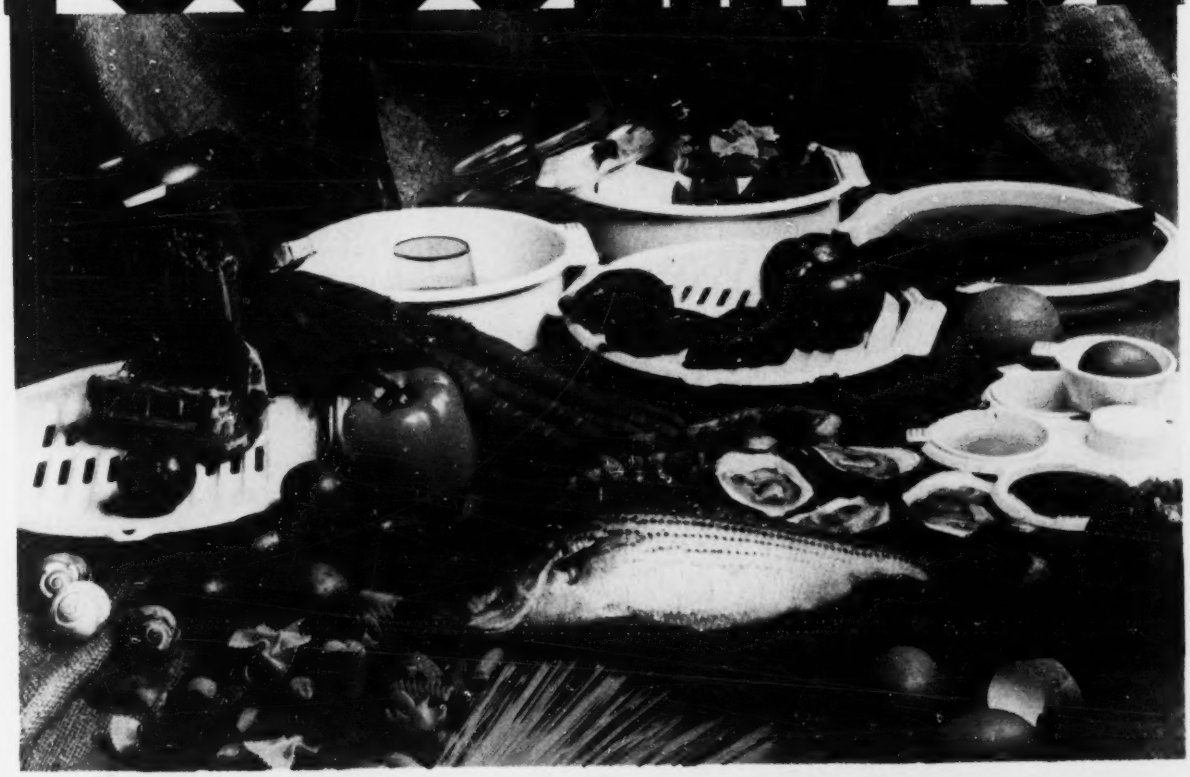
Currently, in most fresh prepared food applications, nylons, polyvinyl chloride, nitrile resins, and other polyolefins are used with success in this market. Anit-fog properties are often added to many lidding materials. Many of the trays used are composed of high density polyethylene, or crystallized polyethylene terephthalate.

And, with some success as well, the techniques of modified atmosphere packaging can be applied to the fresh refrigerated segment depending on the application. If special gas mixtures are not desired or needed, then another possibility, as discussed previously, is the use of oxygen scavengers in these products. Or better yet, just sticking with basics can ensure success: strictly-controlled processing techniques and a superior refrigeration system.

"Basically," says Jerry Lyons, "convenience is not new. But, the new thing is freshness, health, and no preservatives. With this trend, there are large entrepreneurial projects going on that relate to traditional marketing techniques. But we must remember that we can't forget the consumer in all of these efforts. This trend can be an expensive proposition and as a food program it needs commitment; you can't maintain a grocery-like mentality of price, price, price. The market needs people who can really prepare the products, display them, and store them. A lack of skills will hold companies back in this area."

So, we as consumers have many options today—fresh, frozen, shelf stable. Without a doubt, the product mix in the industry is changing because the products and packages *work*. Where we buy our products is changing too; the grocery stores, supermarkets, and hypermarkets will also influence many of the changes. "The perimeter of some of our stores is visibly increasing," says Campbell's Mel Druin, "and the processed food area is decreasing. The consumer is going for more quality and fresher foods. And the most important thing to remember is that consumers may turn out to be the competition because now they have the option to choose among any item they want. They can effectively jump from shelf stable to fresh refrigerated and get a good product."

LOOK BEFORE YOU LEAP INTO FOODSERVICE



New foodservice markets offer opportunities to ambitious food manufacturers. But, novices are warned to do their homework before knocking on any doors.

PATRICIA M. DILLON
SENIOR ASSOCIATE EDITOR

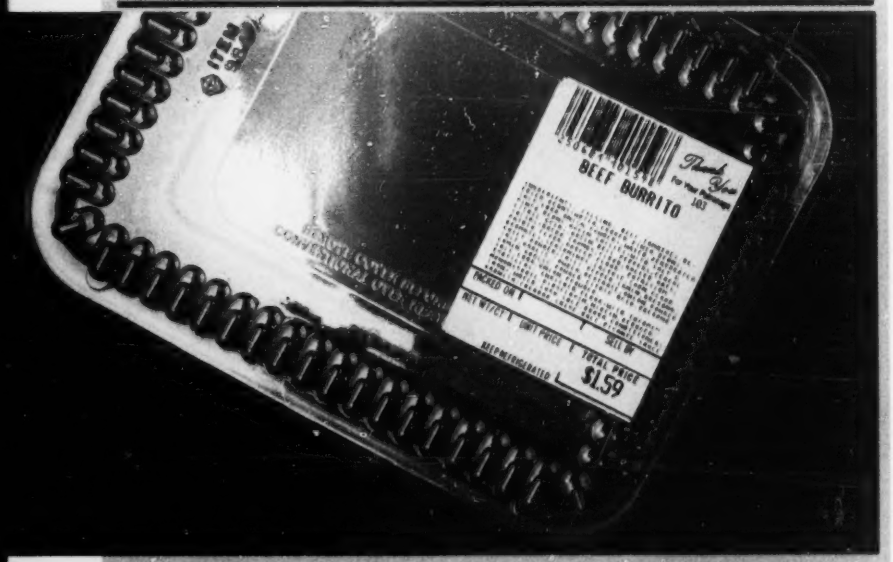
Socrates' advice to know thyself can readily apply to food manufacturers contemplating the plunge into new foodservice markets that have expanded during the last few years. Foodservice operators maintained that the one principle to which successful suppliers must adhere is to know the market thoroughly before taking the leap.

The notable trend in foodservice is the same as that which pervades the entire food industry, namely the national fixation on health and nutrition.

WaveWare Excel Microwave Cookware is one of the first reusable polyethylene terephthalate (PET) polyester cooking lines available. Currently the rage in Europe, it is expected to sweep the U.S. soon. (Source: Eastman Chemical Co.)

Some foodservice operators report that their customers seek foods with no preservatives, thus fresh foods take on renewed importance. As a result, foodservice operators seek suppliers

Look Ma, no expiration date!



Since there are no laws yet governing the use of expiration dates on chilled foods, it's pretty much "an anything goes" proposition. At a suburban Philadelphia supermarket, the label clearly showed the name of the product, its unit price and its weight. However, the "packed on" and "sell by" dates were missing. When asked why there was no expiration date on the package, the deli manager pointed out that the mysterious numbers in the upper right hand corner (4007) indicated the day the food was packaged (April 7) and that on a daily basis, store personnel pull any product that is three days old. When asked about making the expiration date clear to the consumer by putting it in the "sell by" slot, the deli manager shrugged and said she didn't know how to get the computer to do that and that the consumer would just have to trust the judgment of the store. On a second visit to the store, other labels showed combinations of numbers that obviously had no correlation to a recent date (see "103" in photo).

A.G. Ebert, technical director of the Chilled Foods Association (CFA), said that supermarkets currently are not regulated to put expiration dates on food that is made and packaged within the store, but that they should.

In June, the Association of Food & Drug Officials will meet in Denver and are expected to harmonize regulations regarding expiration dates, said Mardi Mountford, associate director of CFA. Although the association's regulations are not legally binding, its decisions are often adopted as law on a state-by-state basis. Since expiration dates have been a topic of concern for many state attorneys, it is expected that states will adopt the regulations fairly quickly.

who can deliver high quality, fresh foods consistently.

Consumer food dollars can be divided almost in half between foodservice and retail. In 1989, consumers spent $214.7 billion or 46.9 percent of their food dollars in foodservice and $243.3 billion or 53.1 percent in supermarkets and retail outlets, according to Technomic, Inc., a Chicago-based marketing firm.

"If you're in food and not in foodservice, you're missing half the business," as Daryl Boddicker, vice president of national sales and distribution, Kraft Foodservice, Deerfield, IL, noted.

His advice to first-time foodservice suppliers? Come up with something relatively unique in either product, service or packaging. And be sure to deliver consistent quality and value for the price.

Getting to know the market begins with locating the hottest growth areas. Restaurants and lunchrooms account for the largest segment of the foodservice market with sales of $65.3 billion in 1989, up 3.5 percent from 1988, according to Technomic, Inc. Most of the growth in restaurants during the last five years can be attributed to take-out, said Roger Rumble, president of General Mills' Foodservice Division based in Minneapolis, MN. Take-out is part of all the chains owned by Stouffer Foods Corp. of Braintree, MA, said Peggy Anderson, marketing manager. Stouffers operates chains such as *J.B. Winberie, Rusty Scupper,* and *Parkers Lighthouse.*

As a further refinement of the take-out concept, General Mills has experimented with home delivery in the guise of *Bringer's*, home delivery of hot foods such as entrees, appetizers, sandwiches and desserts. Market testing began late March in Western Minneapolis following an earlier experiment with home delivery of more formal fare that customers themselves would heat.

General Mills owns two restaurant chains and is looking into a third. A trial outlet of *China Coast* opened in

Pre-cooked sauces such as spaghetti sauce can be pumped into Cryovac bags which then are refrigerated until heated for later use. (Source: Cryovac Division, W.R. Grace & Co.)

Florida in February and will have to undergo market testing for several years before becoming a chain.

Olive Garden, an Italian restaurant chain, is another General Mills brainchild. It has been listed by *Restaurant Business* as number two on the list of top ten growth chains in 1988. Sales increased nearly 80 percent to more than $300 million in 1989 and sales in 1988 broke the prior year's earnings by a whopping 78 percent.

Ann Powell of Olive Garden attributes the secret of the chain's growth to the financial base provided by its parent company. Another key ingredient to its record success – seeking and maintaining long lasting supplier relationships which ensure delivering quality product on schedule, she said.

Quality is enough of a priority to Olive Garden that it has established its own microbiological lab to test product. In addition, the chain sends its own quality control inspectors to check supplier facilities.

Dick Monroe of General Mills' *Red Lobster* seafood chain wants "suppliers that know us, our strategies and objectives." Good suppliers are expected to know, as well as Monroe knows, "the importance of delivering exactly what the customer wants, even though it may contradict what *you think* the customer wants."

Bring something to the party

Good suppliers are expected to anticipate consumer trends and advise foodservice operators on how to market those trends. Monroe described the supplier who suggested how Red Lobster could become more environmentally-responsible by using recyclable packaging. "We like guys who bring information to the party," said Monroe.

Fast food	$84.2
Restaurants	65.0
Commercial cafeterias	4.2
Convenience stores	5.9
General merchandise	2.6
Other retail hosts	5.4
Lodging	7.4
Recreation	7.4
Drinking places	1.3

Source: Technomic, Inc. Food Industry Group.

One person who brought something to the party was John Dusing of Dean Foods, Franklin Park, IL. His company developed aseptic packaging for cheese sauce that unlike canned cheese, can be heated in the microwave. It is easy to handle, is pumpable and has the potential to be recycled, according to Dusing.

Packaging is a double-edged sword to foodservice retailers. Increased use of it is needed to meet consumer demands for convenience but operators are concerned about how to dispose of it. Portion packaging has become a vanguard within foodservice since it saves labor.

It is expected to explode over the next several years, with Kline & Co., Inc. of Fairfield, NJ forecasting sales of portion packaging to double to $200 million a year by 1993. To counter the influx of packaging, some companies are using fewer materials to give the same packaging efficiencies or using recyclable materials, such as paperboard.

Meanwhile a novel application of plastics has been achieved by Eastman Chemical Co. of Kingsport, TN, a division of Eastman Kodak. The company says it has formulated the first re-usable polyethylene terephthalate (PET) cooking lines. *Waveware Excel* microwave cookware can go from the freezer to the microwave or conventional/combination oven to the table. The cooking dishes are marketed and produced by Promoco of Roscommon, Ireland and are used throughout Europe. Industry insiders say they expect the cookware to reach U.S. shores in the near future.

Zeroing in on delis

Within the last five or six years, more food manufacturers' foodservice

divisions have been turning their attention to grocery stores, said Mary Kay O'Connor of the Dairy-Deli Association, Madison, WI. A virtual renaissance has been occurring in the category with foodservice supermarket deli sales reaching $1.32 billion in 1989. With total deli sales ringing up $9.56 billion and more than 19,700 supermarket delis located throughout the country, food marketers have identified a viable market with high growth potential.

However, there are two viewpoints about how food manufacturers can break into the supermarket deli market. "There's always room for innovative products, but there's no room for start-ups," said Mark Hyland, vice president of sales, Orval Kent in Chicago, supplier of many of the cold salads sold by grocery delis. "It's ultracompetitive and the present companies are meeting the food store's needs." He added that buyer-supplier relationships are tough to initiate and a company needs a lot of capital to break into the industry.

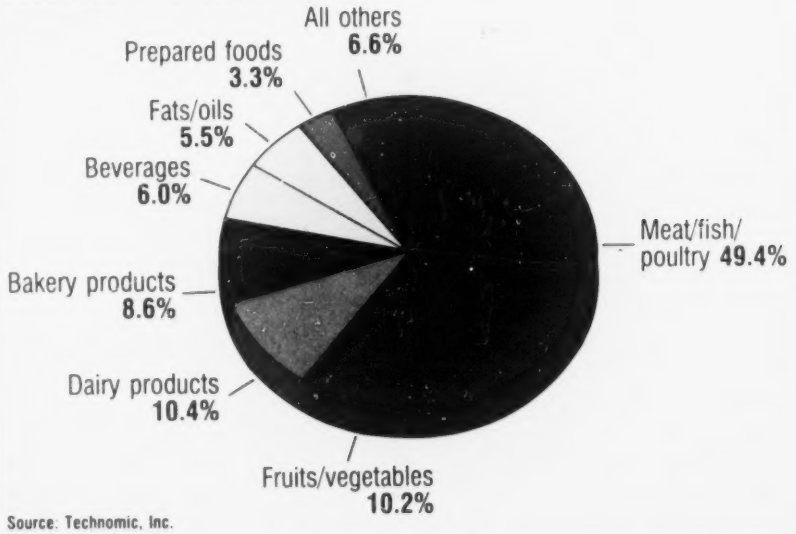
Meanwhile a more optimistic note came from Joe Salvatore, Grand Union's vice president of deli merchandising. He estimates that ten to 12 percent of the Fort Lee, NJ-based chain's supermarket deli sales volume is prepared in the its commissary; 20-25 percent in the store; and the balance supplied by outside companies.

Suppliers formulate deli products to Grand Union specifications which then become proprietary and can only be sold under the Grand Union label. Offers from new suppliers will be considered as long as the consumer demand for convenience continues, Salvatore added.

Mike Hove, chef at Goodings Supermarkets, Altamonte, Springs, FL, estimates that 90 percent of the grocer's deli offerings are prepared in-house. The remaining ten percent comprises prepared salads from outside vendors. He prefers to deal with suppliers who can offer a large variety of foods that are different from his competitors.

Mike Acuna, chef at a Vons Co. supermarket in El Monte, CA, estimates that 60 percent of the deli products are made in-house with the balance equally divided between foods prepared at the central commissary and outside vendors such as Orval Kent and small gourmet food companies. Acuna specializes in making "comfort" foods that are classic American favorites as well as ethnic specialities.

Manufacturers' sales by product
1989 total = $76.57 billion



Source: Technomic, Inc.

Nancy Lazara of Larry's Markets in Seattle, WA estimates an equal mix between in-store-, commissary- and supplier-prepared foods. She spared no words in saying that suppliers must upgrade the quality of their food. Larry's prides itself, she said, on offering fresh, restaurant-quality food and often supplier product doesn't measure up to standard.

Supermarkets have enthusiastically embraced foodservice to meet consumer demands for convenience since there is a higher profit margin to be earned. Food retailers' traditional profit margin, which has been one to two percent, can be 25 to 35 percent in the deli, according to Hyland.

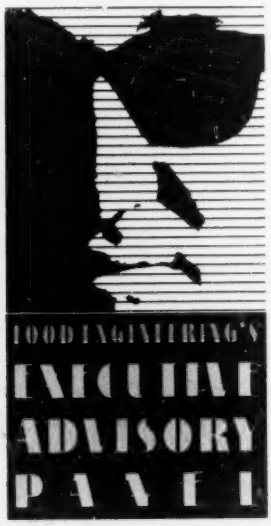
In the quest to reach the convenience-hungry consumer, some supermarkets have not only added precooked, packaged dinners to the deli self-service section but have packed them in microwaveable packaging. Goodings Supermarkets offers lasagna, grilled chicken with rice, and Lo Mein with eggroll entrees that have been prepared in the store and put in microwaveable packaging. The packaging is complete with a label listing ingredients and an expiration date.

Expiration dates continue to be an area where grocers have creative license, since there are no federal regulations requiring them (see sidebar). A grocery store in a Philadelphia suburb has the "sophistication" to label in-store prepared foods with the product name, unit weight, product weight and a code, none of which give a clue as to the expiration date.

However, other grocers such as Goodings Supermarkets' Mike Hove, acknowledged the importance of putting expiration dates on products although he is not required by law. He added that store policy "does not try to push the limits of expiration dates."

Although foodservice offers an immense challenge to suppliers by demanding top quality, fresh foods delivered within a tight timeframe, it is a market that is worth exploring since it is growing rapidly. Food manufacturers need only to take a close look before taking the leap.

INGREDIENTS BUYERS SURVEY



Natural ingredients, low-calorie formulations and fewer preservatives are all the rage.

PATRICIA M. DILLON
SENIOR ASSOCIATE EDITOR

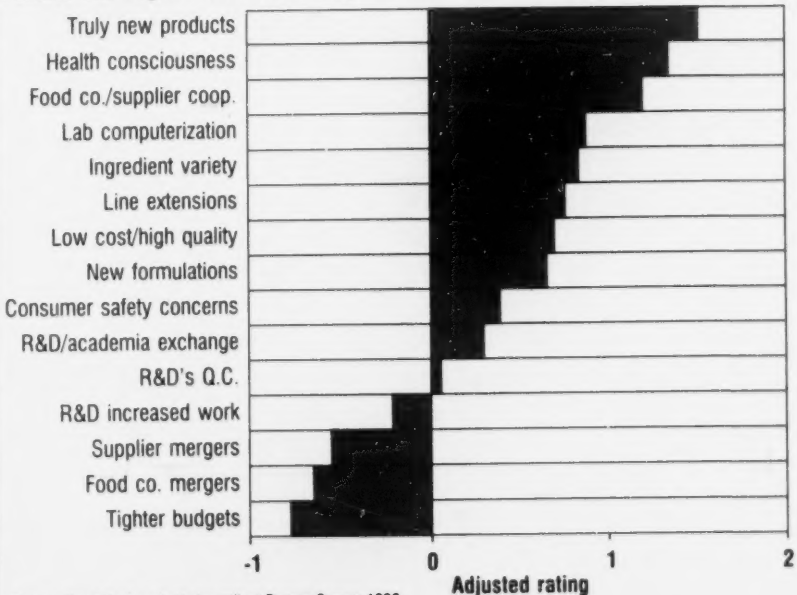
Ingredients *au naturel* will continue to be the first choice of ingredient buyers according to *Food Engineering's* latest poll of our Executive Advisory Panel. More than half of the buyers surveyed said they are seeking stable natural flavors to whet the public's demand for convenience foods that can also boast of natural flavors on the label.

Developing products that are perceived as being healthy was the top concern of the vast majority of our respondents. A Maryland vice president of product development recognized the consumer trend to diet and splurge when he forecast that the push will continue to be in the area to make desserts for health conscious consumers.

At the same time, approximately 41 percent were dismayed by the high prices of natural ingredients and a significant number were concerned about finding reliable sources for natural ingredients.

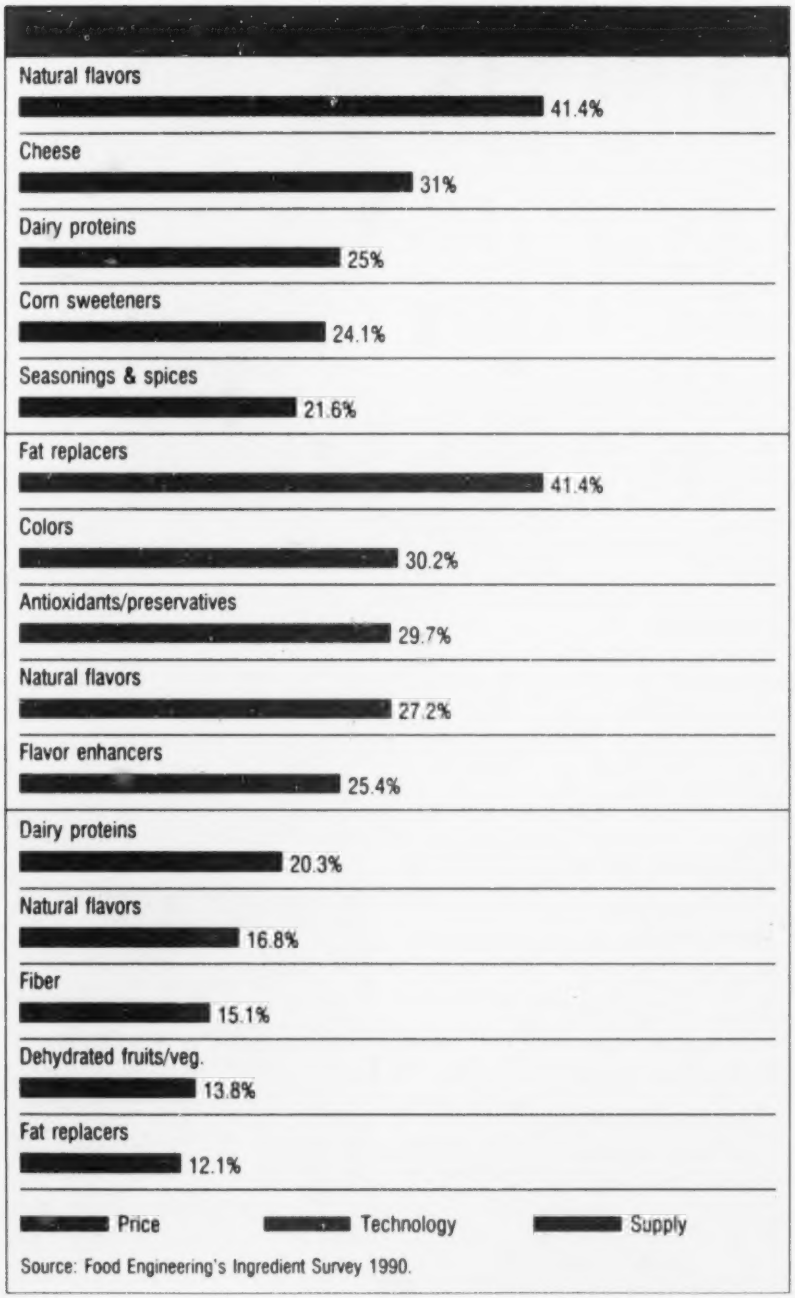
There is a trend away from preservatives as buyers place their hopes on breakthroughs in packaging and enzyme technologies. To further the development of packaging for these new preservative-free products, buyers

Positive and negative factors affecting R&D



Source: Food Engineering's Ingredient Buyers Survey 1990.

INGREDIENT BUYERS SURVEY



Source: Food Engineering's Ingredient Survey 1990.

called for greater cooperation between ingredient research and development departments and packaging companies. If preservatives are used, they must be "more effective, safer and acceptable to the public," said a Northeast vineyard owner.

If preservatives are abandoned, then new packaging will have to take up the slack as many new packaging and processing breakthroughs eliminate the need for preservatives. However, a research specialist based in Minnesota cast a shadow of doubt on the new technology by saying, "New processing techniques and new packaging are creating new products to meet marketing people's needs, but too frequently are of dubious benefit to consumers. Products are becoming needlessly costly."

Recent Food and Drug Administration (FDA) clearance of NutraSweet Company's *Simplesse* fat substitute has further widened the door to possible applications of fat substituted products. Forty-one percent of our respondents take into account fat-reduction products in their product development decisions. However, buyers are looking for fat substitutes that are heat-resistant in addition to calorie and fat-reduced. "Calorie, fat and cholesterol will be high priorities in all new research," said the president of a small Pennsylvania food company. An R&D group leader at a Minneapolis-based firm predicted that, "more fat/calorie replacement systems will be developed. Nutrition will be less of a player in the future."

However, while nutrition may take a back seat to the convenience and natural categories, market segmentation in the health area will continue. Increasingly, products are being marketed to certain diet problems, such as the lactose intolerant, diabetics and those allergic to MSG.

This generation's toaster

With more than three-quarters of America's households having microwave ovens, there is a continuing need for "lower-cost, convenient, good-tasting microwave products," according to a Canadian R&D manager. Many respondents want ingredients that can withstand high-intensity heat of microwave ovens. One R&D specialist wants to see "novel techniques of flavor encapsulation with true and stable fresh flavors."

INGREDIENT BUYERS SURVEY

	Total panel	Meat	Bakery	Dairy	Flavors/ ingred.	Canned	Fats & oils	Frozen foods	Confect- ionery	Cereals/ grains	Bever- ages
Using natural ingredients	51.3	51.3	40.3	37.0	54.3	53.3	39.6	47.2	29.4	46.6	53.6
Reducing preservatives	29.7	31.3	35.5	27.4	29.6	30.0	35.4	36.1	27.5	34.5	26.8
Vitamin fortification	14.7	10.0	11.3	17.8	9.9	3.3	12.5	11.1	17.7	15.5	14.3
Low-calorie foods	37.1	42.5	40.3	46.6	37.0	43.3	47.9	50.0	35.3	37.9	35.7
Low-fat foods	41.4	53.8	51.6	50.7	43.2	46.7	60.4	55.6	37.3	55.2	33.9
Reducing sodium content	37.5	47.5	37.1	39.7	40.7	50.0	41.7	52.8	29.4	41.4	37.5
Saturation level of fat	35.3	35.0	46.8	39.7	34.6	30.0	52.1	41.7	39.2	46.6	30.4
Reduced cholesterol	38.4	41.3	43.6	41.1	32.1	40.0	45.8	50.0	39.2	50.0	35.7
Incorporating fiber	18.1	12.5	25.8	9.6	14.8	13.3	22.9	19.4	11.8	43.1	16.1
Using non-irradiated ingredients	8.6	7.5	8.1	2.7	11.1	6.7	14.6	11.1	5.9	13.8	5.4
Using pesticide-free ingredients	34.1	31.3	21.0	34.3	34.6	46.7	29.2	36.1	25.5	22.4	28.6
HAACP conditions at suppliers	31.0	31.3	30.7	41.1	37.0	33.3	43.8	33.3	33.3	22.4	30.4

Source: Food Engineering's Ingredient Survey 1990.

Consumers currently have a tendency to use the microwave only to warm foods, causing an Alabama dairy marketing director to describe it as being, "this generation's toaster." However, a research manager at a major Midwest food and beverage conglomerate foresees a time when there will be a full-fledged microwave cuisine. Ingredients will have to withstand longer periods of heat along with combinations of microwave/convection heating without losing flavor.

Ingredient buyers report their companies continue to experiment with new combinations of ingredients in applications such as gourmet and ethnic specialties. However, nowadays new products "must be developed and tested at an accelerated pace. Business can no longer afford lengthy market test procedures," said a technical manager in Oregon. "We will become more sophisticated in screening out unsuccessful products prior to entering the marketplace. Product introductions will have a higher guarantee of success."

Another area of concern to our respondents was the problem with coloring. A Bronx executive complains about unreliable color supplies, price problems and federal bans based on the premise that "if a rodent eats 10 tons daily for a century it might develop cancer."

Roadblocks

Almost 70 percent of the ingredient buyers participating in our survey are food scientists involved in R&D. And one of their biggest complaints is the lack of time they have to develop products. Food techs lament the lack of personnel and training. Panelists also felt that upper management is too shortsighted. Companies were cited by panelists for lack of long term goals, poor communication, and slashing budgets in the wake of mergers.

There was a widespread call for more time and money earmarked for

INGREDIENT BUYERS SURVEY

Peering upwards into the blue sky

We asked the *Food Engineering* Advisory Panel to "blue sky" for us. What ingredient or ingredient system would they like to see which has yet to be developed?

The most frequent choices were for fat substitutes, calorie-free bulking agents, high intensity low-cal sweeteners and cholesterol-free ingredients.

More unique requests included: "True microwave flavors," from a Chicago food executive. A Missouri packaging engineer seeks "a good, low-priced 'real' chocolate flavoring." Fresher-tasting fruit flavors was a Kentucky product development specialist's dream. A Northeast beverage formulator would like to jazz up the appearance of beverages with stratification effects.

An Oregon technical service manager would like "a really super flavor enhancer to replace MSG that would not be considered an artificial ingredient." A New York baker called for expanded supplies of low-sodium baking powders and supplies for allergy diets. A greater variety of dust-free colors is needed, according to a Minneapolis plant superintendent. A Kansas director of R&D would like a low-cost meat substitute such as textured vegetable protein that has the texture of meat. Finally, an Indiana packaging engineer wishes for an edible oxygen scavenger. The list of ideas emerging from the wide blue yonder appear to be endless. However, it is also an indication that the food industry sees only the sky as its limit.

research and development. A Wisconsin cheese company's product development director said that more R&D time was needed to prevent premature introduction of products, such as oat bran, that often don't live up to taste expectations. A New Jersey food development manager elaborated on this by requesting that more definitive studies be made on the health effects of foods and food combinations. New food products should be developed that address these health concerns, he maintained, while not sacrificing taste. The food development manager called for "real innovations, not just marketing reactions."

While the major thrust in research and development is toward the development of new products, a significant portion of our respondents showed dissatisfaction with the influx of "me too" products that only imitate what is already on the market. A manager of engineering says less basic research is being done by food companies with many becoming dependent on their suppliers' R&D. An alternative proposed by an Iowa food company executive is to develop closer working relationships with major universities with good food science departments. A Northeast food technologist sees future food innovations coming from overseas or small U.S. firms.

A good number of respondents pointed out the lack of technical competence on the part of sales and manufacturing. Top management doesn't understand research and development programs and processes, said a Wisconsin technical director. Many respondents complained about having their creative and technical efforts squashed by bureaucratic procedures. Respondents also said money and time were the most valuable commodities on their wishlists.

A Midwest researcher was not alone in blasting the marketing/advertising department for pushing health claims for products that R&D must scramble to formulate. "Marketing/advertising hype is getting out of control, demanding nutritional/medical benefits which are unrealistic. It does generate new technologies, but creates two levels of moral conscience," the researcher commented.

However, consumers' preoccupation with what they *think* is healthy along with their lack of knowledge in nutrition continues to worry the industry. A Midwest food scientist notes that "consumers lock into one aspect of the food they eat due to popular media attention whether it is a proven fact or not. Next year it will be a new topic. It's hard to hit a moving target."

Several respondents said consumers need more nutrition education to be better informed on issues such as pesticides and to prevent foodborne illness.

A Chicago-area R&D specialist harpooned the media for "conflicting, incomplete and biased 'health' reporting. Lucky the company who produces a favored ingredient, such as oat bran. Pity the cookie manufacturer who used coconut oil."

FE's Ingredient Buyers Survey costs $125. To purchase it, contact: Anne Hartnett, telephone (215) 964-4444 or fax (215) 964-4273.

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